

# 論 文 要 旨

## Thesis Abstract

(yyyy/mm/dd) 2020年 06月 30日

※報告番号	乙 第 92 号	氏 名 (Name)	Nguyen Tri Cuong
<p>主論文題名 (Title)</p> <p>13.56 MHz Antenna Design For Dynamic EV Charging System</p>			
<p>内容の要旨 (Abstract)</p> <p>In the present, energy and environment are concerned. In daily life and production, transport is very important. It also consumes a lot of energy. Gasoline and oil are used in common. They have the high energy density but they are limited. Moreover, the emissions are the major issues when fossil energy is used. Hence, the electrification for transportation has been carrying out for many years. A train can get electric power easily because it runs on a fixed rail. It's not easy for the electric vehicle (EV) to get power in a similar way. Therefore, the EV has to equip a large and heavy battery pack. It is very necessary for a long trip. And people have to connect the vehicle to power source for a long time to charge the battery. It is not convenient. Dynamic charging by using wireless power transfer (WPT) is a solution. It can increase the moving distance and reduce the battery capacity. In this dissertation, the design of the 13.56 MHz antenna and the efficiency improvement of the dynamic charging system are presented.</p> <p>Firstly, the strongly coupled magnetic resonance is analyzed in coupled mode theory and circuit theory.</p> <p>Secondary, the 13.56 MHz antenna is analyzed and designed by finite element analysis. The simulation result of the over 90% antenna at 50 cm is shown. The physical model of the antenna is created. It can operate in the wireless power transfer system.</p> <p>Lastly, the problem of the wireless dynamic charging system is presented. Moreover, the proposed solution to improve the efficiency of the antenna the system is shown. The efficiency of the antenna can be increased in the charging area. The results are shown in simulation and experiments.</p>			

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